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EXAMINER

OLSEN, KAJ K

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 06/22/2005.

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,917

Applicant(s)

KHESIN ET AL.

Examiner

Kaj K. Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-20, 22, 23 and 25-42 is/are pending in the application.
- 4a) Of the above claim(s) 32-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-20, 22, 23, 25-31 and 38-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2-10-05; 5-19-05</u> | 6) <input type="checkbox"/> Other: _____ |

S.O.

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DETAILED ACTION

Election/Restrictions

1. Claims 32-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper dated 2-9-2004.

Claim Rejections - 35 USC § 112

2. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. In claim 12, "the third electrode" lacks antecedent basis. It would appear that claim 12 should depend from claim 11 and the examiner has interpreted it as such for the purpose of examination.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 7, 9-15, 17-20, 22, 23, 25-30 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Yokota et al (USP 6,254,749). Yokota was previously relied on as a

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secondary teaching for a number of the dependent claims. The examiner is now also relying on Yokota as a primary teaching as well.

6. Yokota discloses a gas sensor system for monitoring gas concentrations in a combustor that comprises an outer shell (6, 53 or 103 in fig. 9, 10 and 13 respectively) having at least one opening in fluid communication with a gas to be measured. Yokota further discloses a solid electrolyte cell (1, 11) disposed with the outer shell with at least one seal cooperating with the electrolyte cell to form a sensing chamber (i.e. reference gas region) isolated from the measured gas. See col. 6, ll. 34-37 as an example. Yokota further discloses a first electrode (3, 12, 16, or 32) with the sensing chamber not in direct contact with the sample gas and a second electrode 2, 13, and 27 as examples) disposed in the outer shell. See col. 7, ll. 6-64. The second electrode is in proximity to the at least one opening giving the claim language its broadest reasonable interpretation. Yokota further discloses applying a voltage across the first and second electrodes (see fig. 14). With respect to the first and second electrodes generating a signal comprising a DC component and a fluctuating AC component, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

However, the examiner notes that any measured signal from a sensing probe like Yokota will inherently be a combination of AC and DC components. This is because these sensors respond to a gas concentration as gas concentration changes. When gas levels vary, that gas level variance could be represented by a combination of DC and AC curve fitting. Hence the sensor response of Yokota could thereby also be fit to a combination of a DC and an AC curve. See alternative rejection with Dietz below. With respect to the processing portion, see claim 12 as an example where Yokota states the presence of a "means to measure an electromotive force

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change...to thereby determine the concentration of carbon monoxide”. This means would meet the claimed processing portion. With respect to the processing station being for “analyzing each of the DC component and a fluctuating AC component”, this is merely setting forth an intended use of the processing station and is not explicitly reciting any inherent structure for the processing station. However, see alternative rejection with Dietz below. With respect to the sensor being for the measure of flue gas, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

7. With respect to the reference gas conduit, see col. 13, ll. 7-15.

8. With respect to the seals, the tip of electrolyte 11 constitutes one seal while element 52 constitutes another seal. See fig. 10 and col. 12, ll. 16-31.

9. With respect to the various claims about how the signals from the sensor are processed, including the new limitation about how the voltage signal represents two concentrations, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

10. With respect to the third electrode, see fig. 4 and col. 9, l. 56 through col. 10, l. 11.

11. With respect to the use of a filter covering a third electrode to eliminate the effect of a second gas, see col. 10, l. 60 through col. 11, l. 3.

12. With respect to the new limitation of claim 15 with the processing portion for “calculating the standard deviation of the signal fluctuation of the AC component” is again merely citing intended use of the processing portion. However, see alternative rejection below.

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13. With respect to the type of unclaimed combustor utilized, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

14. With respect to porous catalytic electrodes, see col. 7, ll. 6-64.

15. With respect to the use of stabilized zirconia, see col. 5, ll. 27-33.

16. With respect to the support conduit, any number of the elements shown in fig. 13 would constitute a support conduit giving the claim language its broadest reasonable interpretation.

With respect to the support conduit being affixed to a wall of a combustor, the examiner does not believe the applicant is actually claiming a combustor wall so this affixing to a wall is only the intended use of the gas sensor system.

17. With respect to the first and second electrodes having different associated time constants, this would read on differences in the amount of porous material placed over each electrode (see paragraph 0045 of the specification). In view of this, the embodiment of fig. 6 would thereby meet this limitation. See col. 10, ll. 51-61. With respect to utilizing the equations of claim 38 for calculating the time constant, calculating the time constant using the specified equation is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

Claim Rejections - 35 USC § 103

18. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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19. Claims 1-10, 15, 17, 18, 20, 22, 23, 25-30 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber (USP 4,944,861) in view of Kimura et al (Principles and Development of a Thick-Film Zirconium Oxide Oxygen Sensor, pp, 101-120, from ACS Symposium Series 309, 1986).

20. Reber discloses a gas sensor comprising an outer shell 41 disposed in a stream of gas having at least one opening 44 in fluid communication with the gas to be monitored. See fig. 3 and col. 5, ll. 29-43. Reber further discloses a solid electrolyte cell 11 disposed within the outer shell with a seal that forms a sensing chamber (i.e. reference gas chamber) isolated from the gas to be monitored. See fig. 1 and col. 2, l. 48 through col. 3, l. 20. Reber further discloses first and second electrodes disposed within the reference gas chamber and in the outer shell respectively (see claim 1). The second electrode would be in close proximity to the opening giving the claim language its broadest reasonable interpretation. With respect to Reber being utilized for a monitoring of flue gases in a combustor, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see col. 2, ll. 13-19 saying the use of the sensor in a furnace was anticipated. With respect to the generation of voltages across the electrodes, that is also only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see col. 2, ll. 33-37. With respect to the first and second electrodes generating a signal comprising a DC component and a fluctuating AC component, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, the examiner notes that any measured signal from a sensing probe like Reber will inherently be a combination of an AC and DC component. This is because these

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sensors respond to oxygen concentration and oxygen concentration changes. When oxygen levels vary, that oxygen level variance could be represented by a combination of DC and AC curve fitting. Hence the oxygen sensor response could thereby also be fit to a combination of a DC and an AC curve.

21. With respect to the new limitation requiring the presence of a processing station, Reber discloses how the measured signal is processed (col. 1, ll. 15-18), but does not explicitly disclose the use of a processing station. Kimura explicitly recites the presence of a voltmeter for making the measurement and shows how the measured voltage is related back to an oxygen partial pressure. See equation 1 on p. 101, fig. 1 and fig. 6. This structure of Kimura would read on the set forth processing station giving the claim language its broadest reasonable interpretation. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Kimura for sensor system of Reber so that the measured signal may be related back to oxygen partial pressure. With respect to the processing station being for “analyzing each of the DC component and a fluctuating AC component”, this is merely setting forth an intended use of the processing station and is not explicitly reciting any inherent structure for the processing station. However, see alternative rejection with Dietz below.

22. With respect to the reference gas conduit, see col. 3, ll. 8-20 of Reber.

23. With respect to the conduit in the outer shell, see Reber, fig. 3 and col. 5, ll. 34-43.

24. With respect to the delivery of calibration gas or the extraction of sample flue gas, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

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25. With respect to the seals, the tip of 11 constitutes one seal while the sealing structure set forth in fig. 1 and col. 2, l. 48 through col. 3, l. 20 constitutes another seal.

26. With respect to the thermocouple, see col. 3, ll. 5-11.

27. With respect to the various claims about how the signals from the sensor are processed, including the new limitation about how the voltage signal represents two concentrations, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

28. With respect to the new limitation of claim 15 with the processing portion for “calculating the standard deviation of the signal fluctuation of the AC component” is again merely citing intended use of the processing portion. However, see alternative rejection below.

29. With respect to the type of unclaimed combustor utilized, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

30. With respect to the support conduit, any number of the elements shown in fig. 1 of Reber would constitute a support conduit giving the claim language its broadest reasonable interpretation. With respect to the support conduit being affixed to a wall of a combustor, the examiner does not believe the applicant is actually claiming a combustor wall so this affixing to a wall is only the intended use of the gas sensor system.

31. With respect to the use of stabilized zirconia, see col. 3, ll. 33-45.

32. With respect to the first and second electrodes having different associated time constants, this would read on differences in the amount of porous material placed over each electrode (see paragraph 0045 of the specification). However, it is notoriously old in the art to coat an electrode

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in an exhaust gas space with a protective layer to prevent premature failure of the electrodes. It is unnecessary to coat the reference electrode because it is not exposed to a harsh gas environment. In particular, this is demonstrated by Kimura et al where the measuring electrode is coated with a protective layer while the reference electrode is not (fig. 1, 2, 7, and 8). Kimura further goes on to disclose that each of the electrodes has a differing response to exhaust gas. See tables 1 and 11 where the measuring electrode and reference electrodes are governed by different equations. In particular, notice that the measuring electrode is a function of diffusion coefficient for the protective layer ($D_{O_2}(PL)$) where the reference electrode is not. It would have been obvious to one of ordinary skill in the art at the time the invention was being made for Reber to include a porous protective layer to the measuring electrode (as taught by Kimura) in order to avoid premature failure of the measuring electrode. As discussed above, the use of a porous protective layer would result in a different associated time constant for each electrode (namely it would take gas molecules longer to get to the measuring electrode than to the reference electrode). With respect to utilizing the equations of claim 38 for calculating the time constant, calculating the time constant using the specified equation is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

33. Claims 1-10, 15, 17, 18, 20, 22, 23, 25-30 and 38 in the alternative are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Kimura and Dietz et al (USP 4,419,190). Dietz is being cited and relied on for the first time with this office action.

34. With respect to the above claims, these were rejected over the combination of Reber and Kimura alone on the grounds that applicant's new limitation about the processing portion

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“analyzing each of the DC component and a fluctuating AC component” did not further limit the structure of the processing portion (see above). However, even if the examiner gave these limitations about the processing portion further patentable weight, Dietz teaches in an alternate oxygen sensor that a gas sensor can be provided with a waveform that is a combination of a DC voltage and an AC voltage and the two components can each be analyzed. The DC portion is utilized to determine the oxygen concentration while the AC portion is utilized to determine the temperature of the sensor. See fig. 1-3 and col. 4, l. 15 through col. 5, l. 20. This thereby reads on the intended function of the processing portion. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Dietz for the sensor system of Reber and Kimura so that the temperature of the gas sensor can be directly measured.

35. Claims 1, 2, 7, 9-15, 17-20, 22, 23, 25-30 and 38 in the alternative are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota in view of Dietz.

36. With respect to the above claims, these were rejected over Yokota alone on the grounds that applicant’s new limitation about the processing portion “analyzing each of the DC component and a fluctuating AC component” did not further limit the structure of the processing portion (see above). However, even if the examiner gave these limitations about the processing portion further patentable weight, Dietz teaches in an alternate oxygen sensor that a gas sensor can be provided with a waveform that is a combination of a DC voltage and an AC voltage and the two components can each be analyzed. The DC portion is utilized to determine the oxygen concentration while the AC portion is utilized to determine the temperature of the sensor. See fig. 1-3 and col. 4, l. 15 through col. 5, l. 20. This thereby reads on the intended function of the

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processing portion. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Dietz for the sensor system of Yokota so that the temperature of the gas sensor can be monitored.

37. Claims 3-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota (with or without Dietz) in view of Reger.

38. With respect to claims 3-6, Yokota (with or without Dietz) set forth all the limitations of the claims, but did not explicitly recite the presence of the set forth conduit adjacent to the electrolyte cell. As discussed above, Reger set forth such a conduit for the purpose of insuring that the measurement gas does not get stagnant around the measurement cell. See Reber, fig. 3 and col. 5, ll. 34-43. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Reber for the sensor system of Yokota (with or without Dietz) in order to ensure gas samples are being continuously refreshed. With respect to the remainder of these claims, they just constitute intended use of the sensor system.

39. With respect to claim 8, Yokota set forth all the limitations of the claim, but did not explicitly recite the presence of a thermocouple. Reber also disclosed the presence of a thermocouple so that the temperature can be monitored. See col. 3, ll. 5-11. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Reber for the sensor system of Yokota so that the temperature of the sensor can be monitored.

40. Claims 11-14, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Kimura (with or without Dietz) in further view of Yokota et al (USP 6,254,749 B1).

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41. With respect to claims 11, 13 and 14, Reber and Kimura (with or without Dietz) set forth all the limitations of the claims, but did not explicitly recite the set forth third electrode cooperating with the first and second electrodes. Yokota teaches in an alternate gas sensor that two gases can be monitored simultaneously by providing two different electrodes on the outside of the solid electrolyte element so that oxygen and carbon monoxide can be simultaneously measured. See fig. 4 and col. 9, l. 56 through col. 10, l. 11. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Yokota for the sensor of Reber and Kimura (with or without Dietz) such that other gas components can be simultaneously monitored thereby increasing the utility of the sensor to other gas constituents.

42. With respect to claim 12, see col. 10, l. 60 through col. 11, l. 3 of Yokota, which teaches the use of a filter over at least one electrode to eliminate interference from a second gas.

43. With respect to claim 19, Reber and Kimura (with or without Dietz) disclose all the limitations of the claim, but did not explicitly specify the use of porous electrodes. However, it is notoriously well known that gas sensor electrodes should be porous so as to increase the effective surface area of the electrode. In particular, this is demonstrated by Yokota, which teaches that the electrodes should preferably be porous. See col. 7, ll. 63 and 64. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Yokota for the gas sensor of Reber so as to increase the overall surface area of the electrode.

44. Claims 31, 39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reber in view of Kimura (with or without Dietz) and Maeda (USP 4,828,673). Maeda '673 is

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being cited and relied on for the first time with this office action (note: this is not the same reference as the previous Maeda).

45. Reber and Kimura (or Reber, Kimura and Dietz) set forth all the limitations of claim 1 (see rejections of claim 1 above). Amended claim 31 appears to be drawn to all the structure of claim 1 with the further addition of a second sampling probe. Reber and Kimura (or Reber, Kimura and Dietz) do not set forth the presence of a second sampling probe. Maeda '367 teaches in alternate gas sensor that two sampling probes can be placed side by side each other for the purpose of monitoring a plurality of different gas constituents. In particular, a combination of two sensor probes allows one to determine both the oxygen concentration and the combustible gas concentration. See fig. See fig. 11 and col. 5, l. 27 through col. 6, l. 43. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Maeda '367 for the sensor system Reber and Kimura (with or without Dietz) such that plural constituents in the sample gas can be measured.

46. With respect to claim 39, see the previous rejection of claim 38.

47. With respect to claim 42, this claim merely recites intended use of the analyzer.

48. Claims 31, 39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota (with or without Dietz) and Maeda (USP 4,828,673).

49. Yokota (or Yokota and Dietz) set forth all the limitations of claim 1 (see rejections of claim 1 above). Amended claim 31 appears to be drawn to all the structure of claim 1 with the further addition of a second sampling probe. Yokota (or Yokota and Dietz) does not set forth the presence of a second sampling probe. Maeda '367 teaches in alternate gas sensor that two sampling probes can be placed side by side each other for the purpose of monitoring a plurality

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of different gas constituents. In particular, a combination of two sensor probes allows one to determine both the oxygen concentration and the combustible gas concentration. See fig. 11 and col. 5, l. 27 through col. 6, l. 43. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Maeda '367 for the sensor system Yokota (with or without Dietz) such that plural constituents in the sample gas can be measured.

50. With respect to claim 39, see the previous rejection of claim 38.

51. With respect to claim 42, this claim merely recites intended use of the analyzer.

52. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber and Kimura (with or without Dietz) in further view of EP 0 120 423 A1.

53. Reber and Kimura (with or without Dietz) set forth all the limitations of the claim, but did not explicitly recite the use of a flexible hose. However, the claimed flexible hose would read on a jacketed cable. EP '423 teaches the use of a jacketed cable to house the various electrical wires that connect the sensor to its electrical circuitry. See fig. 6 and p. 8, ll. 21-23. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of EP '423 for the sensor of Reber and Kimura (with or without Dietz) in order to keep all the wires together and protected. With respect to the hose being "flexible" cables are typically flexible so as to allow the sensor to move freely during installation.

54. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota (with or without Dietz) in view of EP 0 120 423 A1.

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55. Yokota set forth all the limitations of the claim, but did not explicitly recite the use of a flexible hose. However, the claimed flexible hose would read on a jacketed cable. EP '423 teaches the use of a jacketed cable to house the various electrical wires that connect the sensor to its electrical circuitry. See fig. 6 and p. 8, ll. 21-23. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of EP '423 for the sensor of Yokota (with or without Dietz) in order to keep all the wires together and protected. With respect to the hose being "flexible" cables are typically flexible so as to allow the sensor to move freely during installation.

56. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota and Maeda (with or without Dietz) in view of EP 0 120 423 A1.

57. Yokota and Maeda (with or without Dietz) set forth all the limitations of the claim, but did not explicitly recite the use of a flexible hose. However, the claimed flexible hose would read on a jacketed cable. EP '423 teaches the use of a jacketed cable to house the various electrical wires that connect the sensor to its electrical circuitry. See fig. 6 and p. 8, ll. 21-23. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of EP '423 for the sensor of Yokota and Maeda (with or without Dietz) in order to keep all the wires together and protected. With respect to the hose being "flexible" cables are typically flexible so as to allow the sensor to move freely during installation.

58. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reber, Kimura and Maeda (with or without Dietz) in further view of EP 0 120 423 A1.

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59. Reber, Kimura and Maeda (with or without Dietz) set forth all the limitations of the claim, but did not explicitly recite the use of a flexible hose. However, the claimed flexible hose would read on a jacketed cable. EP '423 teaches the use of a jacketed cable to house the various electrical wires that connect the sensor to its electrical circuitry. See fig. 6 and p. 8, ll. 21-23. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of EP '423 for the sensor of Reber, Kimura and Maeda (with or without Dietz) in order to keep all the wires together and protected. With respect to the hose being "flexible" cables are typically flexible so as to allow the sensor to move freely during installation.

Response to Amendment

60. After review of the most recent amendment, a review of the previous office actions, and a review of applicant's comments concerning those office actions, the examiner has made a number of changes to the rejection: The examiner has added the use of Yokota as a primary teaching for all the claims. The examiner also added an alternative rejection to all the claims utilizing Dietz in view of applicant's specified processing portion. As pointed out by the applicant, the examiner mistakenly referred to claim 10 in the rejection of Reber in view of Yokota. That has been changed to refer now to claim 11. The examiner has also dropped the rejection of Takahashi for claim 12 because Yokota already taught the use of a filter (see discussion above) and the use of Takahashi when Yokota had already been applied was redundant. Claim 28, 31 and 39 were previously rejected in further view of Maeda '192. Upon further review, the examiner does not deem this rejection necessary (a flue gas combustor is

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clearly the intended use of the gas sensor system) and these rejections have been dropped. A new Maeda '673 teaching was utilized for claims 31, 39 and 42 in view of the amendment to claim 31.

61. Applicant's arguments are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 15, 2005


KAJ K. OLSEN
PRIMARY EXAMINER